

CLAIMS

What is claimed is:

1. A method for enhancing preservative efficacy of a composition comprising including a preservative-effective amount and a soluble amount of a zinc compound, wherein the composition has less than a preservative-effective amount of a primary preservative agent.
2. The method of claim 1, wherein the zinc compound is in the +2 valence state.
3. The method of claim 1, wherein the composition has a minimum of about 0.001 wt.% of the zinc compound and a maximum of about 1 wt.% of the zinc compound per total weight of the composition.
4. The method of claim 1, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.
5. The method of claim 1, wherein the composition comprises a polycationic material.
6. The method of claim 5, wherein the polycationic material is a cationic cellulosic polymer.
7. The method of claim 6, wherein the composition has a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.% cationic cellulosic polymer based upon the weight of the composition.
8. The method of claim 5, wherein the polycationic material is Polymer JR.
9. The method of claim 8, wherein the composition has a minimum of 0.001 wt.% and a maximum of 0.5 wt.% polymer JR based upon the total weight of the composition.
10. The method of claim 1, wherein the composition is an ophthalmic solution.
11. The method of claim 1, wherein the composition further comprises at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents, viscosity modifying agents and therapeutic agents.

12. The method of claim 6, wherein a ratio of zinc to polycationic material in the composition is a minimum of about 0.001 and a maximum of about 10.

13. The method of claim 1, further comprising a therapeutically effective amount of therapeutic agent selected from the group comprising glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures and combinations thereof.

14. An ophthalmic composition comprising water and a preservative-effective amount and soluble amount of a zinc compound, the ophthalmic composition comprises a less than preservative-effective amount of an ammonium guanidinium or quaternary ammonium compound.

15. The composition of claim 14, wherein the zinc compound is in the +2 valence state.

16. The composition of claim 14, wherein the composition has a minimum of about 0.001 wt.% and a maximum of about 1 wt.% of the zinc compound per total weight of the composition.

17. The composition of claim 14, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.

18. The composition of claim 14, wherein the composition comprises a polycationic material.

19. The composition of claim 18, wherein the polycationic material includes a cationic polysaccharide.

20. The composition of claim 19, wherein the cationic polysaccharide includes a cationic cellulosic polymer.

21. The composition of claim 20, wherein the cationic cellulosic polymer is included in the composition in an amount having a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.% based upon the total weight of the composition.

22. The composition of claim 18, wherein the polycationic material is Polymer JR.

23. The composition of claim 22, wherein the composition comprises a minimum of about 0.001 wt.% and a maximum of about 1 wt.% Polymer JR based upon the total weight of the material.

24. The composition of claim 14, wherein the composition further comprises at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents and viscosity modifying agents.

25. The composition of claim 14, having the form of an eye drop solution.

26. The composition of claim 14, having the form of a contact lens treating solution.

27. The composition of claim 14, being suitable for direct instillation in the eye without causing irritation to eye tissue.

28. The composition of claim 14, further comprising a therapeutic agent selected from the group consisting of glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures thereof.

29. An ophthalmic composition comprising:

water;

at least one therapeutic agent in a therapeutically effective amount; and
a preservative-effective amount and a soluble amount of a zinc compound.

30. The composition of claim 29, wherein the zinc compound is in the +2 valence state.

31. The composition of claim 29, wherein the composition has a minimum of about 0.001 wt.% of the zinc compound and a maximum of about 1 wt.% of the zinc compound per total weight of the composition.

32. The composition of claim 29, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.

33. The composition of claim 29, wherein the composition comprises a polycationic material.

34. The composition of claim 33, wherein the polycationic material includes a cationic polysaccharide.

35. The composition of claim 34, wherein the cationic polysaccharide includes a cationic cellulosic polymer.
36. The composition of claim 34, wherein the composition has a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.% of cationic cellulosic polymer based upon the total weight of the polymer.
37. The composition of claim 33, wherein the polycationic material is Polymer JR.
38. The composition of claim 37, comprising a minimum of 0.001 wt.% and a maximum of 0.5 wt.% Polymer JR based upon the total weight of the composition.
39. The composition of claim 29, wherein the composition further comprises at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents and viscosity modifying agents.
40. The composition of claim 29, having the form of an eye drop solution.
41. The composition of claim 29, having the form of a contact lens treating solution.
42. The composition of claim 29, being suitable for direct instillation in the eye without irritation to eye tissue.
43. The composition of claim 29, wherein the therapeutic agent is selected from the group consisting of glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures and combinations thereof.
44. A method of treating an ophthalmic condition comprising administering a composition comprising water, a therapeutically effective amount of a therapeutic agent and a preservative-effective amount and a soluble amount of a zinc compound.
45. The method of claim 44, wherein the zinc compound is in the +2 valence state.
46. The method of claim 44, wherein the composition has a minimum of about 0.001 wt.% of the zinc compound per total weight of the composition and a maximum of about 1 wt.% of the zinc compound per total weight of the composition.

47. The method of claim 44, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.

48. The method of claim 44, wherein the composition comprises a polycationic material.

49. The method of claim 48, wherein the polycationic material is a cationic cellulosic polymer.

50. The method of claim 49, wherein the composition has a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.% cationic cellulosic polymer based upon the total weight of the composition.

51. The method of claim 48, wherein the polycationic material is Polymer JR.

52. The method of claim 51, wherein the composition comprises a minimum of 0.001 wt.% and a maximum of 0.5 wt.% polymer JR based upon the total weight of the composition.

53. The method of claim 44, wherein the composition further comprises at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents, viscosity modifying agents and therapeutic agents.

54. The method of claim 44, wherein the therapeutic agent selected from the group comprising glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures thereof.

55. A composition comprising water, cationic cellulose polymer and a soluble amount of a zinc compound.

56. The composition of claim 55, wherein the zinc compound is in the +2 valence state.

57. The composition of claim 55, wherein the composition has a minimum of about 0.001 wt.% of the zinc compound and a maximum of about 1 wt.% of the zinc compound per total weight of the composition.

58. The composition of claim 55, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.

59. The composition of claim 55, wherein the cationic cellulosic polymer is included in the composition in an amount having a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.% based upon the total weight of the composition.

60. The composition of claim 55, wherein the cationic cellulose material is Polymer JR.

61. The composition of claim 55, comprising a minimum of 0.001 wt.% and a maximum of 0.5 wt.% Polymer JR based upon the total weight of the composition.

62. The composition of claim 55, wherein the composition further comprises at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents and viscosity modifying agents.

63. The composition of claim 55, having the form of an eye drop solution.

64. The composition of claim 55, having the form of a contact lens treating solution.

65. The composition of claim 55, being suitable for direct instillation in the eye without irritation to eye tissue.

66. The composition of claim 55, further comprising a therapeutically effective amount of therapeutic agent selected from the group consisting of glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures thereof.

67. A process for making an ophthalmic composition, the process comprising the step of mixing an aqueous solvent with a preservative comprising a preservative-effective amount and a soluble amount of a zinc compound wherein the preservative does not contain a preservative-effective amount of a primary preservative agent.

68. The process of claim 67, wherein the zinc compound is in the +2 valence state.

69. The process of claim 67, wherein the composition has a minimum of about 0.001 wt.% of the zinc compound and a maximum of about 0.001 wt.% of the zinc compound per total weight of the composition.

70. The process of claim 67, wherein the zinc compound is selected from the group comprising zinc citrate, zinc chloride, zinc acetate, zinc bromide, zinc fluoride, zinc iodide, zinc ammonium sulfate, zinc nitrate and zinc sulfate.

71. The process of claim 67, further comprising adding a polycationic material.

72. The process of claim 71, wherein the polycationic material is a cationic cellulosic polymer.

73. The process of claim 72, wherein the composition has a minimum of about 0.001 wt.% and a maximum of about 0.5 wt.%, based upon the total weight of the composition.

74. The process of claim 71, wherein the polycationic material is Polymer JR.

75. The process of claim 74, wherein the composition comprises a minimum of 0.001 wt.% and a maximum of 0.5 wt.% Polymer JR based upon the total weight of the composition.

76. The process of claim 71, wherein a ratio of zinc compound to polycationic material in the composition is a minimum of about 0.001 and a maximum of about 10.

77. The process of claim 44, further comprising adding at least one component selected from the group consisting of tonicity adjusting agents, buffering agents, chelating agents, pH adjusting agents, viscosity modifying agents and therapeutic agents.

78. The process of claim 44, further comprising adding a therapeutically effective amount of a therapeutic agent selected from the group comprising glaucoma agents, muscarinics, carbonic anhydrase inhibitors, dopaminergic agonists and antagonists, anti-infectives, non-steroidal and steroidal anti-inflammatories, prostaglandins, enzymes, growth factors, anti-allergics, beta-blockers and mixtures thereof.